PARTIAL TRANSLATIONS

DE 41 30 079 C2 **Device for the reception of ancillary aggregates in motor vehicles**

The object of the invention is to provide a device for the reception of ancillary aggregates in motor vehicles, in particularly actuation and gear elements of car seat adjustment units, window lifters, or alike. According to the invention, the ancillary aggregates (1, 2) are at least partially contained by a housing (3; 31; 32; 34) which is essentially only resistant to static forces. This housing (3; 31; 32; 34) is partially contained by a housing (4; 41 to 45) which is resistant to static forces as well as dynamic forces and through which parts of the ancillary aggregates (1, 2) are being guided and/or held.

The invention is based on the discovery that only a few supporting points have to be designated for the ancillary aggregates to achieve efficient absorption of crash forces. In contrast, a housing which is resistant only to static forces made from a cheap material is sufficient to absorb forces that act under normal operation even under difficult conditions and to cover the moved parts of the ancillary aggregates to secure them from external parts or undeliberate interference.

Strains caused by static forces refers here to the kind of strain that occurs under normal operation, i.e. through forces and torsional moments. Strains caused by dynamic forces refers to the strain that results from crashes and torsional moments that result from the crash or occur in connection with the crash forces.

Preferably, the housing that is resistant to both static forces as well as dynamic forces is made out of metal or a fiber-reinforced synthetic material, whereas the housing which is only resistant to static forces consists of a plastic part that can be made using die casting, compression molding or alike.

Figure 1 shows, in two sections which are perpendicular to each other as well as a plan view, the gear element for the adjustment unit controlling inclination or height of a vehicle seat. The ancillary aggregate comprises an electric motor actuation (1) and a gear element (2), which is divided into the following: a worm gear (21), which is connected to the engine shaft; a worm wheel (22) which is connected to the worm gear (21); a second worm gear (23) which is coaxially connected to the worm wheel (22); a gear segment (24) which is combining with the second worm gear (23). The gear segment (24) is connected to the seat cushion base frame or the seat rest cross beam for inclination or height adjustment.

An inner housing (3) made of synthetic material surrounds the worm gear (21), the worm wheel (22) and the second worm gear (23) and in addition serves as a bearing (52) for holding the worm wheel (22) or the second worm gear (23).

An outer housing (4) made of sheet metal surrounds the inner housing (3) in part and comprises additional bearing points (51) for the worm gear (21, 53) for the gear segment (24). In the embodiment shown, the outer housing (4) is preferably located in the side sheet metal of the seat.

The housing and bearing configuration described above show the following main features that distinguish them from the housing and bearing configurations thus far known in the art:

1. Through the bearing of the worm gear (21) and therefore the electric motor actuation (1) in the bearing point (51) and the gear segment (24) in the bearing point (53), which are located in the outer housing (4) which is resistant to static forces as well as dynamic forces, a fixed allotment and fixation of these gear elements is achieved. Therefore, even in case of a crash, movement of these parts caused by the breaking of the bearing point and thus an unintended movement of the seat positioning is avoided.

2. The other aggregates or aggregate parts are located such with respect to the housing that is resistant to static as well as dynamic forces, that in case of a crash the crash forces can be absorbed by that housing in the direction in which the crash forces are acting. In spite of the fact that these aggregate parts might be surrounded by a housing that is only resistant to static forces, this causes a physical proximity to the housing that is resistant to both static and dynamic forces, so that in case of a crash the resulting forces are absorbed by the housing which shows resistance to static as well as dynamic forces before the aggregate parts (in this cases the gear elements) are disconnected from each other and thus before an uncontrolled movement of the seat positioning can occur.

As can be seen in the sections according to Figures 1a and 1b, the inner housing (3) made of synthetic material with the bearing (52) is of a complex structure, whose manufacturing would be very complex if this part was made of metal. But since it is made of synthetic material, it can be easily manufactured using die casting or compression molding at low costs.

DE 41 01 470 C1 **Car seat adjuster for motor vehicle seats**

The object of the invention is to provide an adjuster for motor vehicle seats, with parts that can be adjusted relative to each other comprising a threaded spindle (3) and a spindle nut (6), the latter being located on the threaded spindle (3) and fitted rotatably in a housing (1). The spindle nut (6) has a sleeve-shaped hub (5), which fits onto one end of the spindle nut (6). The end of the sleeve-shaped hub (5) that lies further away from the spindle nut (6) is located in the housing (1) and is connected to an actuation element (19). The axial length of the sleeve-shaped hub (5) is adapted to the minimum effective length of the adjuster. The length of the threaded spindle (3) is chosen according to the maximum adjustment length of the preferably self-locking adjuster.

A self-locking adjuster for motor vehicle seats, with which movable parts can be moved to each other and adjusted, e.g. for the adjustment of different heights and/or inclinations of a seat cushion, comprises in the embodiment shown a pot-like housing (1)

made of a light metal, with a central opening (2) in its bottom part. The diameter of that central opening (2) is greater than the diameter of the threaded spindle (3), which is made of steel. In this embodiment, the housing (1) is closed with a lid (4) which is also made of a light metal. The lid (4) is connected to the housing (1) with screws (which are not depicted here) and comprises a drilling that is allgned with the central opening (2). The central opening (2) forms a friction bearing for the free end of a sleeve-shaped hub (5) that engages in the housing (1).